LENDING INCENTIVES FOR GREEN DEVELOPMENT: Opportunities and Limitations

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As sustainable ("green") development principles and practices make inroads into mainstream real estate development, questions about the availability of loan capital for green development have been raised. On the one hand it is sometimes asserted that both private and public lenders are wary of green development and use more exacting standards in evaluating and underwriting developments with green features. On the other hand it is argued that green development does have to be underwritten differently because the capital/operating/replacement cost calculus of green features is different from ordinary, conventional or non-green building components.

Whether or not lenders are prejudiced against green development is beyond the scope of this paper. The writer has heard progressive, forward-thinking bankers and real estate investors advise non-profit developers to downplay or even hide green features in proposed developments for which they are seeking financing. This probably reflects a general conservatism of bankers about any new or "experimental" products and practices. At the same time this writer has not been able to uncover any examples of green projects that died for want of financing. Documenting such pre-natal project death would probably be worthwhile in building a strong case for dedicated green development lending programs and funds.

Whether having special green loan funds is something to strive for could be debated. On the one hand to the extent that certain lenders -- public and private -- establish dedicated loan pools it can be expected that these lenders will have the technical ability to underwrite green development and can be expected not to harbor uninformed prejudices about green development. Private lenders able to make green lending a profitable line of business can be extremely helpful to introducing green development into mainstream development; profitability is a great converter of capitalist souls. At the same time the establishment of special loan funds for green development - - particularly by public agencies or foundations - - could marginalize green development and further separate it from mainstream capital sources.

My purpose is not to weigh the pros and cons of green loan funds but rather to examine how lending could incentivize and facilitate green development and to identify the types of lending and loan products that will be most beneficial to different aspects of green development. In particular the dynamics of the capital/operating/replacement cost calculus suggest that different lending solutions are appropriate for different situations.

Hopefully the practical outcome of this presentation will be to provide those that might consider capitalizing green loan funds some guidance on how to target and structure this loan capital. The likelihood is that such funds will be capitalized or seeded by public or philanthropic entities. That being the case it is assumed that loan capital is limited in amount but can be priced at below-market rates. Therefore determining when and where the mere availability of capital will be helpful and when, where and how low-cost capital will be helpful is a worthwhile exercise in deciding how to allocate capital.

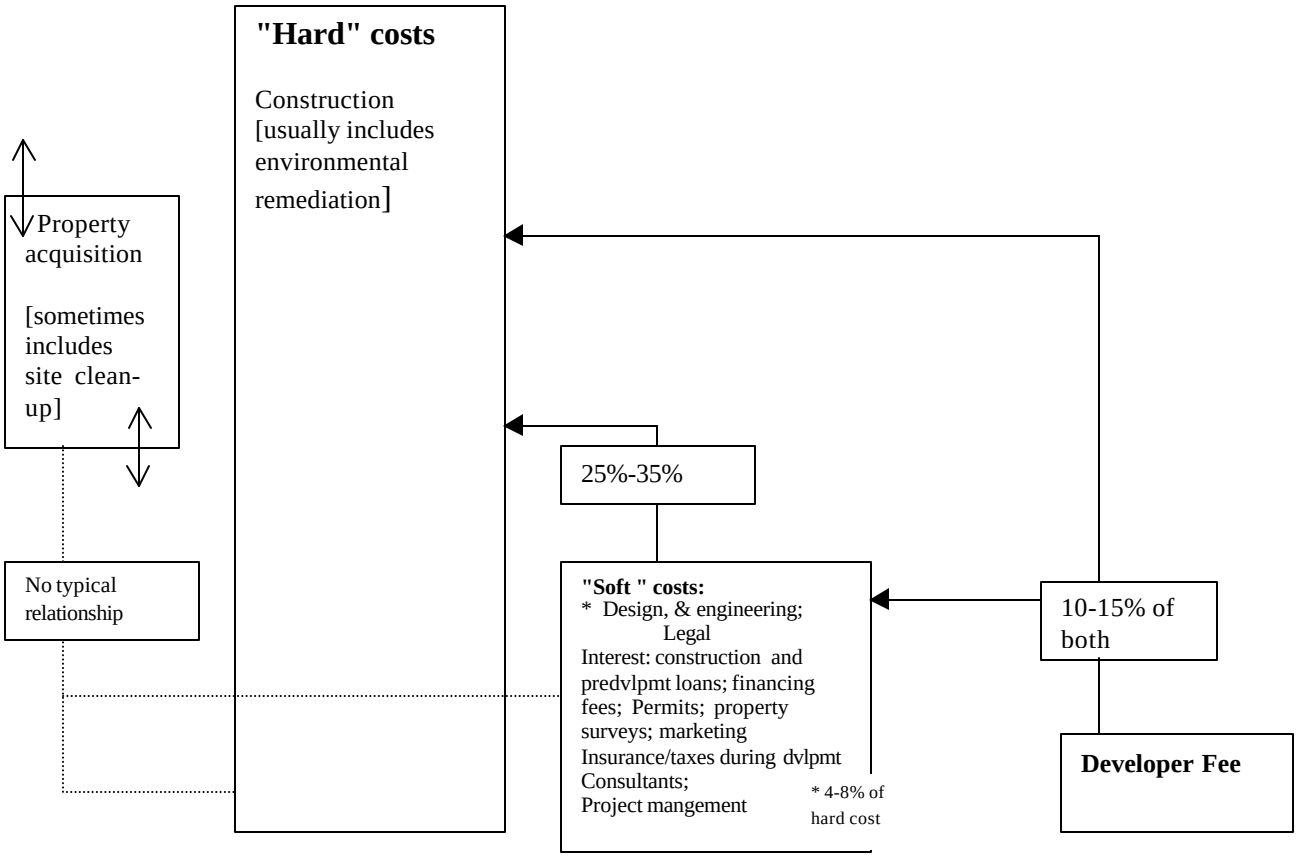
Fundamentals of development costs and development stages

The analysis will be easier to follow if certain common definitions and rules of thumb are shared. To simplify, the examples below assume a residential rental development. Homeownership and commercial/industrial development have somewhat different implications.

Real estate development occurs in three stages, each of which has distinctive financing associated with it:

Stage:	**Pre-development**	**Construction**	**Operations**
What happens	Project is planned, Design is completed, Construction and permanent financing arranged, approvals obtained, (usually) property is purchased	Project is built Project marketed Project occupied	Project is managed and maintained; Capital items replaced over time At end project is sold or re-financed
Type of financing	Pre-development loans; Acquisition loan owner/developer equity	Construction loan Owner/developer equity (sometimes) investor equity	Permanent loan(s) Owner/developer equity (sometimes) investor equity
Duration	6 months- 2years	9 - 18 months	15 - 30 years
Risk level	Highest	lowest	Moderate

The components of a real estate project and some of the costs relative to each other are



In addition to the costs shown, in the case of a rehabilitation project (an existing building is acquired and renovated) the lenders and/or investors sometimes require a "capitalized replacement reserve" to cover the future replacement of building elements that are not being replaced during the renovation

Forty to fifty percent of the soft costs are generally incurred during the pre-development phase.. Developer fees are typically the last funds paid out, and thus serve as an additional contingency for overruns of construction costs.. In fact lenders do look to the "profit" developers are expected to make during operations as well as during development as an additional "cushion" for unanticipated costs.

For illustrative and analytic purposes the following example of per unit costs of a conventional, non-green project will be used below:

Property Acquisition:	$0	[publicly owned, donated land]
Hard costs	$125,000	
Total Soft costs	$ 37,500	[30% of hard costs]
Developer fee	$ 20,313	[12.5% of hard and soft costs]
Total per unit cost	$182,813	

Other assumption in the example:

Design and engineering: $8,125 [6.5% of hard cost]
Soft costs incurred in pre-development: $18,500
Project planning period: 9 months
Project construction period 12 months

Let's assume the following greening measures are taken

Feature	Additional capital (construction) cost	Annual operating cost saving	Additional years useful life over conventl.
I. Passive solar hear/hot water	$1,200	$ 150	?
II. Grey water recycling	$ 700	$ 75	?
II, Roofing material	$1100	$ 0	3
IV. Natural fiber carpeting	$ 600	$ 0	0

Finally we'll assume that

- incorporating the above features increases design and engineering costs by 25%, or $2,032
- Planning and design of green features adds 2 months to the pre-development period → approx. $305 additional pre-development loan interest
- Construction of green features adds 1 month to the construction period → approx $885 in additional construction loan interest
- Developer fee does not increase due to additional greening costs

Thus our green housing unit will have the following metrics:

Property acquisition	$0	
Hard costs	$128,600	
Soft costs	$ 40,181	
Developer Fee	$ 20,313	
Total dvlpmt cost		$189,094

Overall increase in greening cost 3.4%

Recap of costs:

	Convtl.	Green	Difference
Acquisition	$ -	$ -	$ -
Hard	$ 125,000	$ 128,600	$ 3,600
Total Soft*	$ 37,500	$ 40,181	$ 2,681
Developer Fee	$ 20,313	$ 20,313	$ -
Total dvlpmt cost	**$ 182,813**	**$ 189,094**	**$ 6,281**
			3.4%
* Selected soft costs			
Design/engineering	$ 8,125	$ 10,156	$ 2,031
pre-devlpmt. loan int.	$ 984	$ 1,290	$ 306
Constrctn. loan int.	$ 6,500	$ 7,384	$ 884

Green lending impacts in the development cycle

Pre-development lending

Green pre-development loans are likely to have widely varying utility by geography and developer characteristics.

Pre-development capital to plan projects was once a major obstacle - - especially for non-profits -- in developing housing. Typically in the early stages of project planning a loan to a developer

is really made on faith. Usually there is no security from the project that can be offered to the lender. Until the work that a pre-development loan would finance is done, the lender has no assurance that the developer will be able to obtain the later construction and permanent financing that will pay off a pre-development loan. Thus, most developers needed their own equity or an "angel" to undertake any kind of project planning activities.

Today pre-development financing is much more widely available at least for non-profit developers. The three national community development intermediaries -- LISC, Enterprise Foundation and Neighborhood Reinvestment Corp. - - make this type of financing readily available to non-profits with which they are affiliated. Some community development loan funds also provide this type of financing. In Massachusetts, the Community Economic Development Assistance Corp., provides pre-development financing for any non-profit real estate developer in the state.

It seems very unlikely that the added perceived risks of "going green" would deter existing pre-development lenders from providing financing to a green project. At this stage of development, the innovative or experimental aspect of green development is not a significantly greater risk than the larger issues of project feasibility, developer's ability to secure financing and subsidy and sometimes even site control. Could the green elements be the straw that breaks the risk assessor's back? Perhaps in some instances, but this will more likely relate to the lender's judgment of the overall capacity of the developer, something that any lender -- green or otherwise needs to determine.

Pre-development lending targeted to green projects could be valuable where such financing is generally not available for example for private (for-profit) developers or in geographical areas where the standard predevelopment products of the national intermediaries are not available. The challenge to an institution wishing to seed this type of green lending pool would be to identify an intermediary or agent sufficiently familiar with pre-development lending risk assessment in general .

Could favorable pricing of pre-development loan capital serve as an incentive to go green? The most favorable pricing for a pre-development loan would be zero interest.
In our example the total pre-development loan interest, taking account of the longer project planning period, is $1,290 (about $300 higher than the conventional project) If a green lender provided the entire pre-development loan at zero interest, the overall savings would be $1,290, which is only about 20 percent of the additional cost of greening the development. *Thus, it doesn't seem that low-cost pre-development financing alone will be a very powerful incentive to go green.*

Acquisition financing is often provided separately from pre-development financing. In fact not all pre-development lenders will or can provide acquisition financing. For simplicity sake, our example assumed no property acquisition cost. In most instances there will be a property acquisition cost. Early property acquisition is often absolutely critical for project feasibility. Sellers typically do not want to wait one to two years to sell their property, while a developer plans its project and arranges financing. The impact of providing a low or no-interest acquisition

loan depends on the purchase price of the property. Taking our example and assuming different property acquisition prices:

A. Total Hard and Soft costs (convtl. Project) $162,500

Acquisition as % of A.	Acquisition price	Acquisition loan interest @ 8%	Loan Interest as % of green premium	Total devlpmt. cost at this acquisition $	Likelihood of overall financing at this TDC
20%	$ 32,500	$ 1,950	31%	$ 215,313	yes
30%	$ 48,750	$ 2,925	47%	$ 231,563	maybe
40%	$ 65,000	$ 3,900	62%	$ 247,813	no
50%	$ 81,250	$ 4,875	78%	$ 264,063	no
60%	$ 97,500	$ 5,850	93%	$ 280,313	no

In this example it is unlikely that even a no-interest acquisition loan would fully offset the "green premium"; the acquisition price would have to be higher than would be allowed by any likely funders and lenders to the project. Where very high acquisition costs do not make a project infeasible an acquisition loan strategy for green development may make sense.

It is also possible that a combination of acquisition and pre-development low- or no-cost loans could cover the green premium in some instances. Generally however, the pre-development and acquisition loan interest in such projects represents too small a part of the total development cost for the pricing of these type of short term loans to be sufficient to fully incentivize green development. This type of lending in combination with direct grants or other types of loans for green development may, however, be an approach that foundations and donors could explore.

Construction lending

It is unlikely that green development is stymied by the lack of construction financing. Most commercial banks will provide construction financing for any real estate project that has permanent "take-out" sources committed. Construction lenders will generally not lend more than 75 or 80 percent of appraised value of a project. As in the case of pre-development lending, for many non-profits, in many parts of the country this is not a problem, as the national intermediaries, community loan funds and/or public and quasi public lenders have provided subordinate construction financing for many years.

Underwriting construction loans for green development should not really differ dramatically from conventional development. The issue of concern to the lender will be similar: is the contractor capable and qualified? is there an adequate construction contingency to cover unexpected increases? is the architect a capable construction overseer? is construction oversight by architect and developer/owner adequately budgeted? Will the owner be able to market the development and reach sustaining occupancy? Green features should impact these questions only modestly. Perhaps in the case of proprietary techniques, materials and equipment there may be some additional underwriting risks. There may be such niche needs and opportunities to provide some construction loan guaranties in connection with truly cutting edge and completely unproven green elements.

The pricing of construction loans may have a greater impact than pre-development lending on leveling the playing field between green and conventional development. Because construction loans are so much larger than pre-development loans, the potential interest savings from a low- or no-interest construction loan are significant. In the example we have been using, the projected construction loan interest (at 8 percent rate) for the green development is $7,400, which is $1,200 more than the green premium. Therefore a construction loan for the green development priced at about 1% would fully offset the green premium.

Below-market construction lending is a worthwhile area to pursue in developing useful green lending products. The short term nature of construction loans and the relatively low marginal risk of this lending, could make such a product attractive to social and public investors seeking to encourage green development.

Permanent Lending and Operational Period products

A variety of permanent financing operational period tools and techniques may be available to address the very specific challenges of green development.

Green development proponents have advanced cogent arguments that green development makes economic sense as well as environmental sense. Indeed the economic argument may create more converts to green development than the moral and political rationale. The challenge and opportunity of financing solutions is to capture and reflect economic benefits of greening in the financing structure of green development.

There are two common economic themes in green development: (1) many sustainable features in development may cost more at the outset but the cost can be recaptured through the savings in fuel or water associated with these features. (2) Some green features may be more costly at the outset, but their useful lives are longer than their conventional counterparts; they will not have to be replaced as quickly as elements in a conventional development. Some green building elements can make both of these claims…and some may not be able to claim either.

Each of the four green features in our example illustrates a different manifestation of the operating savings and useful life dynamic (previously referred to as the capital/operating/replacement cost dynamic). A financing tool that could level the playing field for each of these features will be presented. To follow the analysis the reader may find it useful to first review some of the fundamentals of real estate underwriting and finance, included in Appendix A.

I. Passive solar heat and hot water system: Additional capital cost $1,200 ; annual savings in operating cost: $150. Here is the basic analysis that would be applied to evaluate the operating cost savings

Addition to project's annual net operating income	$150
Additional funds available to support debt service (with 1.10 debt coverage ratio)	$136

Additional supportable debt (7%, 20 year amortization)	$1,466
Can additional capital cost be financed:	YES

The savings associated with this feature more than offsets the additional capital cost, and should be financeable at market interest rates by conventional lenders. The problem that the developer seeking to incorporate this feature will face will most likely be the skepticism of the conventional lender about the operating savings claims. Documentation of operating savings claims in uneven in the sustainable development arena. With respect to these kinds of features, a very important product could be a *green operating savings guaranty.* This would be a particularly important tool to have not only because it involves no capital outlay by the guarnator institution (unless the predicted savings are not realized) but it would be a way to induce more mainstream financing institutions to underwrite a number of features in green developments. Moreover, by involving conventional lenders in such projects there will be added pressure to rigorously document the resource conservation claims of different green technologies and materials.

II. Grey water recycling system: Additional capital cost: $700; Projected annual savings $60.

Addition to project's annual net operating income	$60
Additional funds available to support debt service (with 1.10 debt coverage ratio)	$55
Additional supportable debt (7%, 20 year amortization)	$586
Can additional capital cost be financed:	NO

This feature does not produce sufficient operating savings to be conventionally financed. The most straight-forward lending solution here is for a green lender to provide a loan with more favorable terms than the conventional mortgage to finance this feature. In this instance the cost savings would produce sufficient funds to support a *$700 loan with a 4.75% rate* and a 20 year amortization. The rate could be varied by changing the amortization period of the loan. Each of the following rate and term combinations will have the same impact (i.e. be adequate to fully finance the green feature)

Interest rate	Term (amortization)
4.75%	20 year
6%	25 year
2%	15 year

However, this is a long-term commitment. Even an interest free loan could not be repaid with this stream of savings in less than 13 years. Other permutations would also be possible in which the green lender provided a smaller amount of the required capital, but at a rate and term sufficiently favorable for the balance of the additional capital cost to be conventionally financed.. In this instance the green lender could provide a $470 loan at 3% for 20 years to make the green feature fully financeable.

III. Roofing material: Additional cost: $1,100; Added useful life 3 years

The analysis of costs and benefits of more durable, longer lasting materials and equipment is similar to Example I but more complicated. The fact that the predicted savings are not verifiable for years into the future is what adds the complication.

Putting some more flesh on the example will enable us to illustrate a different tool:

	Conventional	Green
Initial capital cost	$10,000	$11,100
Expected life in years	10	13
Replacement cost at end of useful life (4% annual inflation)	$14,802	$18,482
Required annual deposit to replacement reserve(assuming 4% annual return on account) to have full cost at time of expected replacement	$1,233	$1,112

Using the argument in example I, the annual savings in required deposits to the replacement reserve - - $121 -- would be more than enough to finance the $1,100 additional cost of the green roofing material. (In fact savings at this level would finance an additional $1,185 of capital cost) However, there are two problems with this argument. First, the green claim will not be verifiable for at least 15 years. If the mortgage lender allows the owner to reduce deposits to the replacement reserve at the outset and the green roof needs to be replaced anytime before year 13, there will be a shortfall in the reserve account. Second, unlike operating expenses, lenders do not do this level of precise underwriting to determine the required level of replacement reserve deposits, but rather use rules of thumb (such as $250 per unit per year for a newly built residential development); during the operational period the lender may require an increase in the replacement reserve deposits or allow a reduction.

However, it may be possible to induce the lender to recognize reduced replacement reserve deposits and use the additional net operating income from such reductions to finance the additional cost of a longer-life element. This would require a different type of guaranty: a guaranty of the shortfall in the replacement reserve arising from the need to replace the feature earlier than the predicted replacement time for that feature. Given the length of such a guaranty -- up to 13 years in our example -- it is more likely that the lender will require the guarantor to actually capitalize the potential shortfall upfroint. In our example the guarantor would actually have to **"lend" the replacement reserve $2,084 at the start of operations and would have received back $3,385** by the end of the 13 year guaranty period, assuming the roofing material lived up to its manufacturer's claims. The effective annual return to the guarantor/lender would be 5.3 percent [The full analysis of this example is presented in Appendix B]

IV Natural fiber carpeting; $600 additional cost; no predicted operating cost savings or longer useful life.

There are a number of green features for which an economic argument cannot yet be advanced. They are more costly than conventional measures and their incorporation into building projects is done because of the environmental and social value. At some point, when the health, environmental or resource costs of the conventional method is known, those costs may become internalized and reflected in the cost of conventional material and equipment, making the green solution more competitive.. On the face of it, these are features that can be paid for only with grants or from higher rents charged by the owner.. There may in fact be

financing tools that can address this type of green feature, although they may be quite capital intensive.

In this analysis let's assume that the only additional feature added to the conventional project is this $600 carpet add.. Assuming there is an additional associated design fee and the same amount of additional time, the final cost will be $674 higher than the conventional project

	Conventional	Green
Total Development Cost (TDC)	$182, 813	$183,487
Mortgage amount (80% of TDC)	$146,250.	$146,789
Annual Debt Service	$13,805	$13,855

The goal here is to find a mix of conventional and green financing that would cover the required mortgage amount for the green project with the debt service needed for the conventional project i.e. find a mix of conventional financing and green financing that will support $146,789 of debt with $13,805 of annual debt service.

The combinations of green loan amount, interest rate and term are limitless: Here are a few examples

Required loan amount to negate impact of $600 non-economic feature

Term rate	15 year	20 year	25 year	30 year
5.66%			$2,734	
4.33%		$2,734		
4.09%				$1,416
3.17%			$1,416	
1.64%	$2,734			
1.62%				$ 978
1.54%		$1,416		

This is a fairly inefficient use of capital and invariably requires the green lender to subsidize some non-green costs in order to make the green features have no impact on the project's rents or cash flow. (The green lender could lend exactly the amount of the additional cost for 78 years at 1 percent interest to accomplish the objective!) In this particular example, an increase in rent of $4 a month would support the cost of financing the natural fiber carpeting. Where non-economic features represent a significant green premium, this financing strategy may be appropriate.

Choosing the tools

There are obviously a variety of ways that institutions with access to capital can facilitate green development through different lending products. It is also possible to mix and match some of the tools described above. For example a green lender might consider some below-market construction financing combined with below-market permanent financing of some of the green features in a development. Pre-development/acquisition loans in combination with other tools

could be effective in offsetting a green premium. In our simple example of a feature with operating cost savings insufficient to cover the additional capital cost, we assumed that the green lender would finance the full additional cost; it is possible to provide a partial guaranty of the savings projected and a smaller amount of below-market financing for the non-economic portion of the marginal cost.

The tools that a green lender selects may be influenced by the lender's particular interest and focus around sustainable development. They are even more influenced by factors such as:

- Amount of capital available to lend
- Required return on capital
- Lender's time-frame for return of capital

Thus a lender with a good deal of lending capital but a short time-frame for green investing will find below-market (very low interest) construction financing more appealing.

It is important to understand the scale of lending required to achieve different objectives. Our examples have been based on per unit costs, savings, etc. However, rental housing is not developed one unit at a time. Scaling our examples up to a more typical 40 unit housing development gives a better idea of the size of the "green premium" and level of lending required to have an impact:

	Total project cost (40 units)
Total Dvlpmt.. Cost (cnvntl)	$7,312,520
Additional design cost	$ 81,250
Additional construction/pre-development interest	$ 42,525
Required construction loan for green project	$6,751,250
Pre-development loan for green project	$ 803,600

	Total project cost (40 units)
Feature I extra cost	$48,000
Feature II extra cost	$28,000
Feature III extra cost	$44,000
Feature IV extra cost	$24,000
Total green premium	$ 251,250

It will also be of particular interest to some institutions (especially foundations) to assess whether lending approaches are preferable to grant-making. It must be recognized that loans by foundations – program related investments ("PRI"s) – do have an opportunity cost, which represents the amount of grant-making that the institution must forego during the life of the loan.. To the extent that the overall return on the institution's capital deployed in a loan is less than the expected earnings from the ordinary investment of the same amount of capital, this is the amount of grant-making (or other related activity) that cannot be accomplished as a result of making the PRI loan..

Following is a summary of the opportunity costs and benefits of the various lending strategies that have been presented above, based on the numbers in the example. (The detailed analysis is included in Appendix C)

Green Lending Opportunity Costs

Tool/loan	Pre-	Construction	Perm.	Capitalized	Perm.

product	develop-ment loan	loan	Financing of operating savings (Exmpl. II)	reserve for longer life guaranty (Exampl. III)	Financing of non-economic features (Exmpl. IV)
Investment amount	$20,090	$81,250	$700	$2,084	$978
Period (years)	1	1	15	13	30
Interest rate	0%	1.2%	2%	n.a.	1.61%
Green premium offset	$1,406	$6,281	$700	$1,500	$674
Total opportunity cost	$1,205	$3,900	$525	$374	$1,757
Present value of opportunity cost	$1,205	$3,900	$230	$401	$596
% of green premium offset covered by PV of opportunity cost	86%	62%	33%	19%	88%

In every instance where an opportunity cost could be calculated the overall opportunity cost of the loan was lower than the amount of project green premium that was offset, i.e. the green lender would not have been able to provide a higher level of green grants than was achieved with green lending.

Conclusion

There are clearly positive lending roles that public, quasi-pubic and philanthropic institutions can assume to help promote sustainable, green development. Taking on those roles could be beneficial in several respects. As participants in project financing, these institutions can get the attention of mainstream financial institutions, which would have to take on underwriting of these projects more systematically if the projects came with other loan capital targeted to the green features. To sustain the availability of green lending capital and to manage the risks it will become incumbent on all of the advocates for green development to focus more on bottom line results of green development and to document completely and compellingly what green measures represent bottom line improvements and which ones are measures worth pursuing even if they cannot yet be fully justified in a marketplace.

Clearly the education of sustainable development champions who have capital is important work that needs to be undertaken. Mapping out an infrastructure for green lending is also a challenge. There is no shortage of work to be done and no doubt a need for financial support to institutionalize a green lending system.

APPENDIX A

[to be completed]

APPENDIX B
Capitalizing a Longer-Life Guaranty

Method and key assumptions:

- Replacement cost over time: Assumes 4% annual inflation of cost
- Replacement reserve balance: Annual deposit using annuity function with a 4% interest rate; term = number of years of useful life and future value the expected replacement cost at the end of the useful life.
- Guarantor's capital deposit : initial deposit; assumes 4% annual compounded interest required to grow to amount of the highest shortfall, i.e. failure of the green feature in the same year that conventional feature predicted to wear out.

	[A]	[B]	[C}	[D]	[E]	[F]		
	Replacement cost over time		Replacement Reserve balances				Repayments to guarantor during guaranty period	
	Conventional	Green	Conventional	Green	Shortfall for early green failure	Back up reserve balances	Annual {[F] - [E]}	Cumulative =[total returned to guarantor if useful life ends in that year
Base year cost	$ 10,000	$ 11,100			{[B] -[D]}			
Annual RR deposit			$ 1,233	$ 1,112				
Capital deposit by guarantor						$ 2,084		
Year								
1	$ 10,400	$ 11,544	$ 1,233	$ 1,112		$ 2,167		
2	$ 10,816	$ 12,006	$ 2,515	$ 2,268		$ 2,254		
3	$ 11,249	$ 12,486	$ 3,849	$ 3,470		$ 2,344		
4	$ 11,699	$ 12,985	$ 5,236	$ 4,720		$ 2,438		
5	$ 12,167	$ 13,505	$ 6,678	$ 6,021		$ 2,536		
6	$ 12,653	$ 14,045	$ 8,178	$ 7,373		$ 2,637		
7	$ 13,159	$ 14,607	$ 9,738	$ 8,780		$ 2,743		
8	$ 13,686	$ 15,191	$ 11,360	$ 10,242		$ 2,852		
9	$ 14,233	$ 15,799	$ 13,048	$ 11,764		$ 2,966		
10	$ 14,802	$ 16,431	$ 14,802	$ 13,346	$ 3,085	$ 3,085	$0	$0
11		$ 17,088		$ 14,991	$ 2,097	$ 3,208	$1,112	$1,112
12		$ 17,771		$ 16,703	$ 1,069	$ 2,180	$1,112	$2,224
13		$ 18,482		$ 18,482	$ -	$ 1,112	$1,112	$3,335

APPENDIX C
Opportunity costs of Green Lending Tools

	Pre-devlpmt loan	Construction loan	Perm. Financing of operating savings (Exmpl. II			Capitalized reserve for longer life guaranty (Exampl. III)			Perm. Financing of non-economic features (Exmpl. IV)		
Tool											
Investment	$ 20,090	$ 81,250*		$ 700			$ 2,084			$ 978	
rate	0.0%	1.2%		2.0%			4% (effective)			0.0%	
Period (years)	1	1		15			13			30	
Amt of green premium	$ 1,406	$ 6,281		$ 700			$ 1,500			$ 674	
Total Opportunity Cost	$ 1,205	$ 3,900		$ 538			$ 374			$ 1,758	
Discounted total Opp. $	$ 1,205	$ 3,900		$ 254			$ 401			$ 596	
Opp. $ as % of premium	86%	62%		36%			19%			88%	
	Opp Cost	Opp Cost	Reg investmt.	Green	Opp. Cost	Reg investmt.	Green	Opp Cost	Reg investmt.	Green	Opp Cost
0			$ (700)	$ (700)	$ -	$ (2,084)	$ (2,084)	$ -	$ (978)	$ (978)	$ -
1	1205	$ 3,900	$ 42	$ 54	$ (12)	$ 125	$ -	$ 125	$ 59	$ 33	$ 26
2			$ 42	$ 54	$ (12)	$ 125	$ -	$ 125	$ 59	$ 33	$ 26
3			$ 42	$ 54	$ (12)	$ 125	$ -	$ 125	$ 59	$ 33	$ 26
4			$ 42	$ 54	$ (12)	$ 125	$ -	$ 125	$ 59	$ 33	$ 26
5			$ 42	$ 54	$ (12)	$ 125	$ -	$ 125	$ 59	$ 33	$ 26
6			$ 42	$ 54	$ (12)	$ 125	$ -	$ 125	$ 59	$ 33	$ 26
7			$ 42	$ 54	$ (12)	$ 125	$ -	$ 125	$ 59	$ 33	$ 26
8			$ 42	$ 54	$ (12)	$ 125	$ -	$ 125	$ 59	$ 33	$ 26
9			$ 42	$ 54	$ (12)	$ 125	$ -	$ 125	$ 59	$ 33	$ 26
10			$ 42	$ 54	$ (12)	$ 125	$ 0	$ 125	$ 59	$ 33	$ 26
11			$ 42	$ 54	$ (12)	$ 125	$ 1,112	$ (987)	$ 59	$ 33	$ 26
12			$ 42	$ 54	$ (12)	$ 125	$ 1,112	$ (987)	$ 59	$ 33	$ 26
13			$ 42	$ 54	$ (12)	$ 2,209	$ 1,112	$ 1,097	$ 59	$ 33	$ 26
14			$ 42	$ 54	$ (12)				$ 59	$ 33	$ 26
15			$ 742	$ 54	$ 688				$ 59	$ 33	$ 26
16 - 29									$ 939	$ 523	$ 416
30									$ 1,037	$ 33	$ 1,004

NOTES; Assumed that the regular investment rate of the lender is 6%, simple interest (earnings not compounded as they are needed for grant-making and/or administration.
* Average amount that would be outstanding on a 1 year $162,500 loan